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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KEEHAN, CHRISTOPHER M

ART UNIT

PAPER NUMBER

1712

DATE MAILED: 04/09/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,921

Applicant(s)

GU ET AL.

Examiner

Christopher M. Keehan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 49-57 is/are pending in the application.
- 4a) Of the above claim(s) 7-33 and 49-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 53-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

Claims 7-33, and 49-52 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The rejection of claims 1-5 under 35 U.S.C. 102(b) as being anticipated by Shiota et al. (5,773,178) has been maintained and is as set forth in the previous office action.

Claim Rejections - 35 USC § 103

The rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Shiota et al. (5,773,178) has been maintained and is as set forth in the previous office action.

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are not considered persuasive. Shiota et al. disclose that if UV exposure is carried out without applying an electric field, then no orientation results (col.6, lines 2-9). This appears to read on the definition of isotropic, which is liquid crystals oriented at random. Applicant claims an isotropic layer (liquid crystals randomly oriented) and then claims the surface liquid crystals are aligned. These appear to be contradictory statements. It is not clear if only the surface crystals are aligned or if all the crystals are aligned. If all the crystals are aligned, then it is not clear how this differs from Shiota et al. If the surface crystals are only aligned, it does not appear that there is sufficient support in the specification. In the specification, applicant discloses polymer ordering on the surface (page 9, lines 24-26). This does not appear to teach or disclose surface liquid crystals being aligned. The liquid crystals, as claimed by applicant, are the reactive mesogen. The polymer at the surface is a composition of an epoxy and the reactive mesogen. These appear to be two different things. Shiota et al. do disclose anisotropic liquid crystal monomers, and the polymer films having a pattern of varying molecular alignment. This would seem to indicate that by being anisotropic, the films have a pattern of molecular orientation, whereas the instantly claimed isotropic seems to

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indicate liquid crystal monomers oriented at random. But prior to being aligned by Shiota et al., the liquid crystals were aligned randomly, or they wouldn't have needed to be aligned. The liquid crystals are then aligned, as claimed by applicant. In addition, applicant has claimed the surface crystals being aligned, which would indicate a pattern of alignment, which is no longer isotropic. Therefore, Shiota et al. still appear to read on the claims as set forth in the previous office action.

Regarding applicant's arguments concerning claim 6, Shiota et al. disclose adding a mixture of one or more photopolymerizable liquid crystal monomers, of which one is diepoxide (col.3, lines 43-53), and the composition contains at least 25 mol% of one or more difunctional or higher-functional monomers (col.2, lines 26-32). It appears that diepoxide is difunctional.

It should also be noted that claim 1 has been amended to contain a process step, "the surface liquid crystals being subsequently aligned." This appears to be a product-by-process limitation, and it is not clear when the surface crystals are aligned materially affects the overall article. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based in the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process."

In re Thorpe, 227 USPQ 964, 966.

New Claim Objections

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Claims 2-6 are objected to because of the following informalities: claims 2-5 should refer back to "the isotropic alignment layer" rather than "the alignment layer." Claim 6 should refer back to "the cured polymer film" rather than "the composition." These appear to be inadvertent errors based on amended claim 1. Appropriate correction is required.

New Claim Rejections - 35 USC § 103

Claims 53-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiota et al. (5,773,178). Shiota et al., is as set forth and incorporated herein. Regarding claim 53, Shiota et al. do not appear to specifically disclose azimuthally oriented liquid crystals. Shiota et al. do disclose orienting the liquid crystals at any desired angle (col.4, lines 48-67), thereby identifying the orientation angle as a result-effective variable. It would have been obvious to one of ordinary skill in the art at the time the invention was made for Shiota et al. to have oriented the liquid crystals at a variety of angles, including that as instantly claimed, through routine experimentation and optimization. A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Boesch*, 205 USPQ 215. Regarding the limitation of rubbing the film, this appears to be a product-by-process limitation, and it is not clear how the orientation occurs materially affects the overall article. "Even though product-by-process claims are limited by and defined by the process, determination of patentability

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is based in the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964, 966.

Regarding claim 54, Shiota et al. disclose a reactive mesogen of UV curable diacrylate monomer (col.3, lines 17-43).

Regarding claim 55, Shiota et al. do not appear to specifically disclose a solvent. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made for Shiota et al., to be able to apply the composition, to have employed a solvent of some kind, with possibly one of the reactants acting as solvent in part.

Claims 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiota et al. (5,773,178) in view of Akashi et al. (5,891,357). Shiota et al. do not appear to specifically disclose a solvent. Akashi et al. disclose a cured polymer film layer comprising a reactive mesogen of liquid crystals (col.3, line 33-col.5, line 67) and epoxy (col.6, lines 30-35), wherein the liquid crystals are dissolved in a solvent (col.9, lines 54-60), more specifically a ketone (Example 1) or toluene (col.13, lines 59-66). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added a solvent as taught by Akashi et al., for use in a variety of applications, to the composition of Shiota et al. as taught by Akashi et al. because Akashi et al. teach that dissolving mesogens of a liquid crystal composition in a solvent produces a more

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versatile composition that can be applied in a variety of ways, resulting in a more efficient composition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Keehan whose telephone number is (703) 305-2778. The examiner can normally be reached on Monday-Friday, from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Dawson can be reached on 308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Christopher Keehan



April 1, 2003



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700